FIG.1

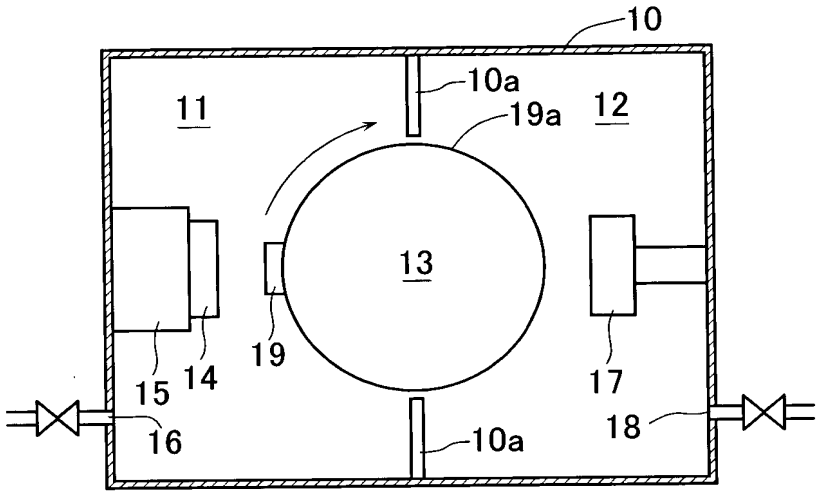

10
10a
11
19a
12
13
19
15
14
17
16
10a
18

FIG.2

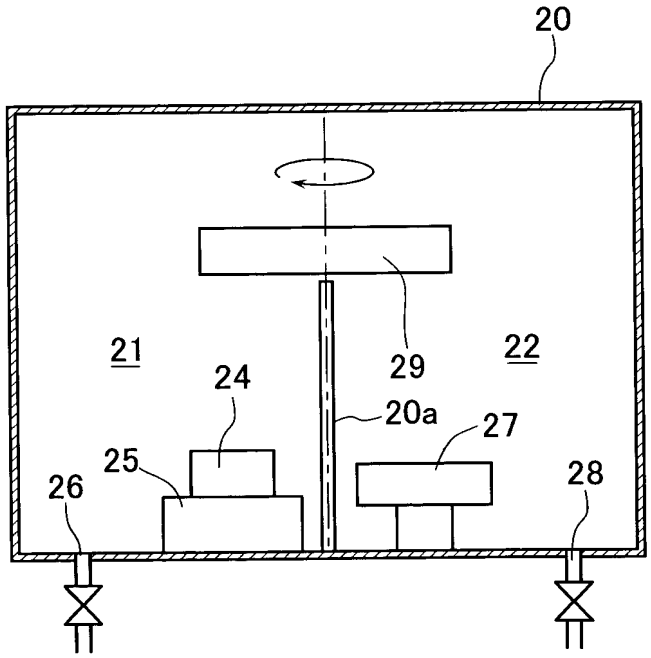

20
21
24
29
22
20a
27
25
26
28

FIG.3

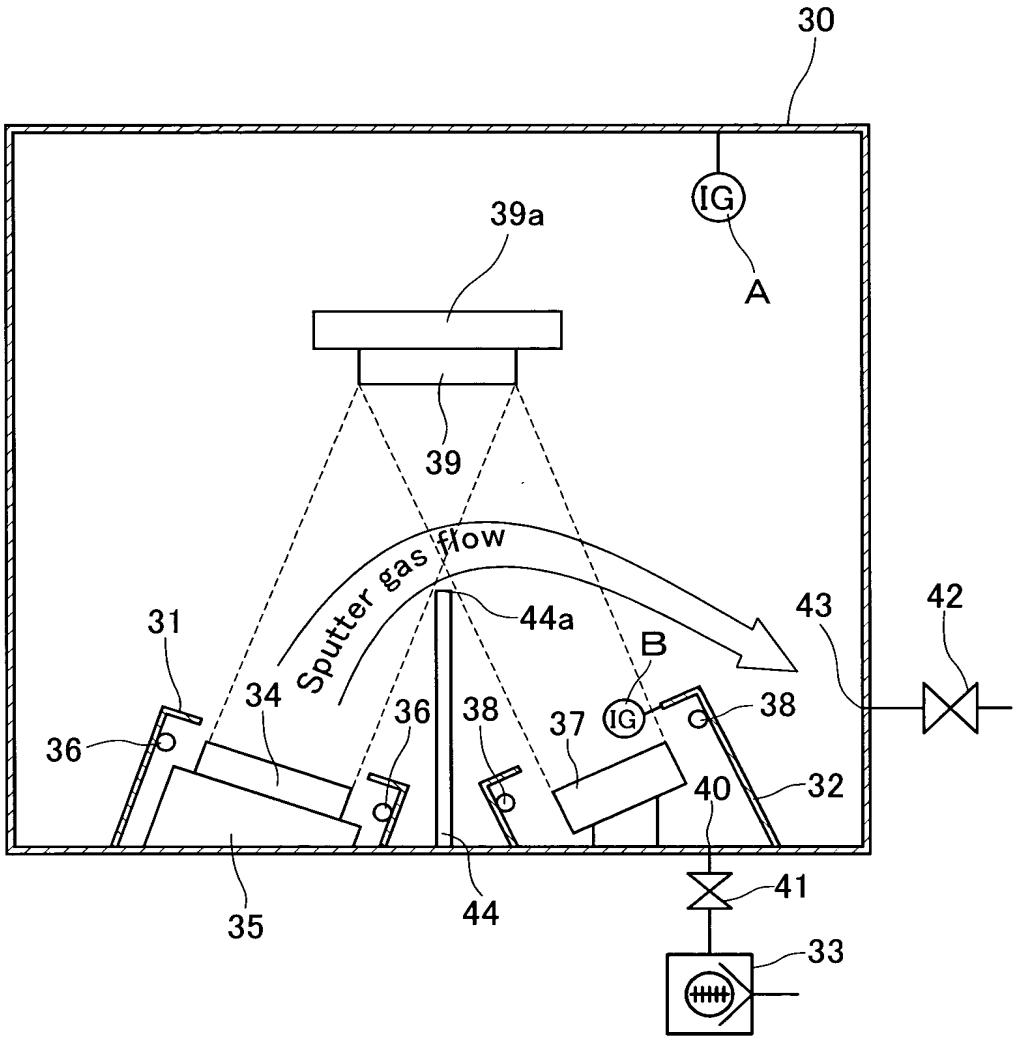

30
IG
A
39a
39
Sputter gas flow
44a
31
34
36
36
38
37
B
IG
38
43
42
40
32
41
33
35
44

FIG.4

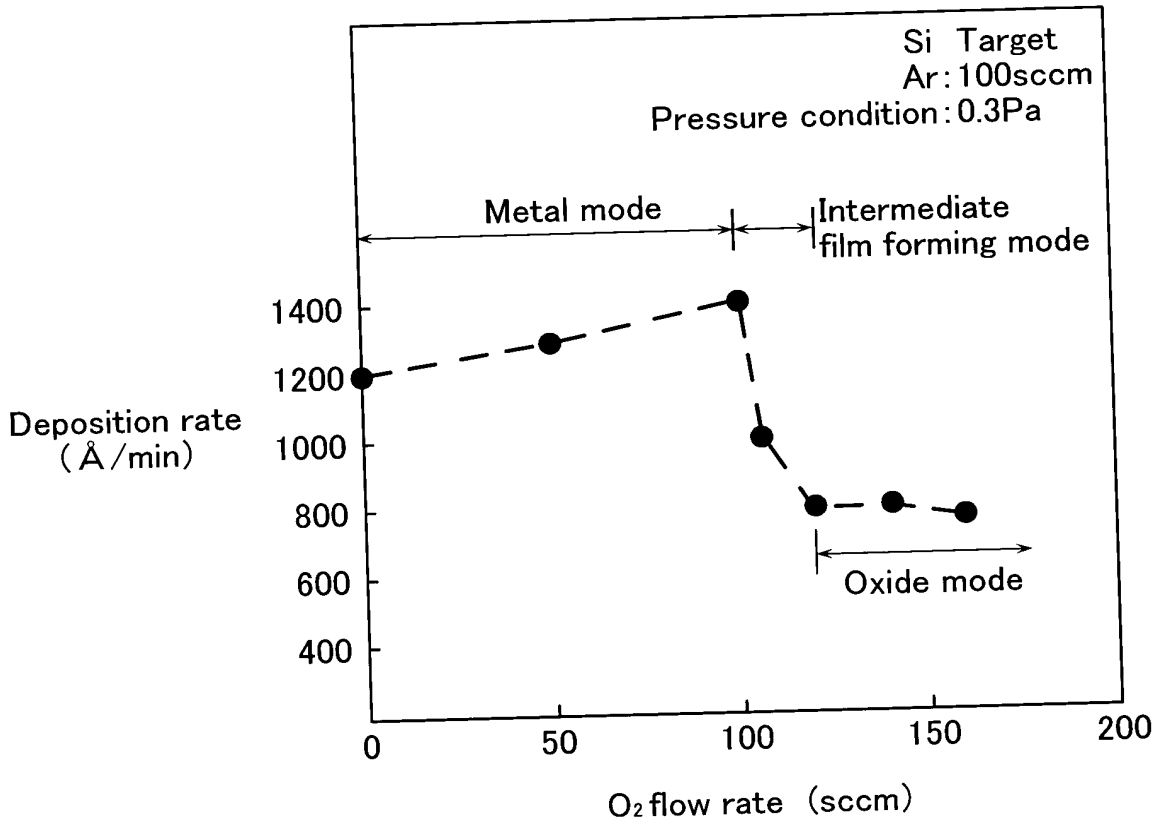
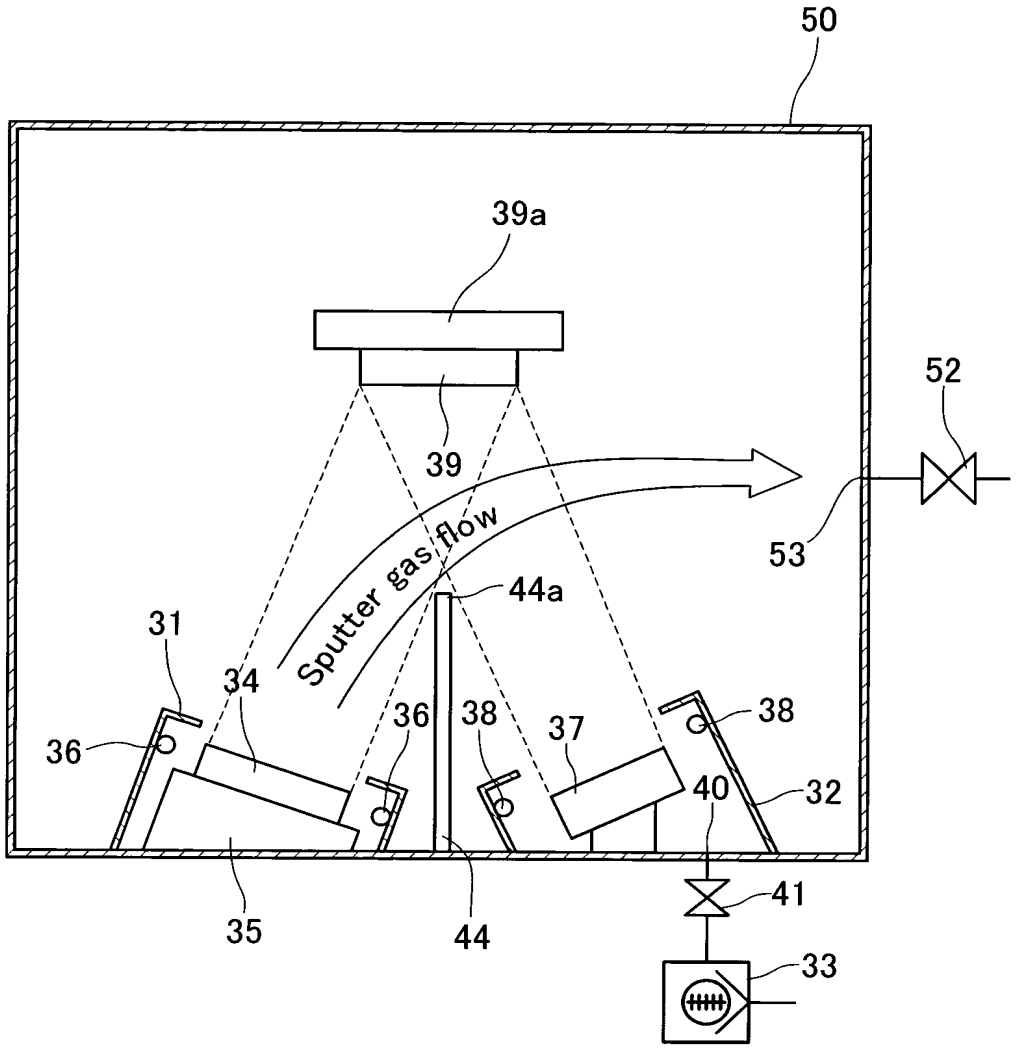
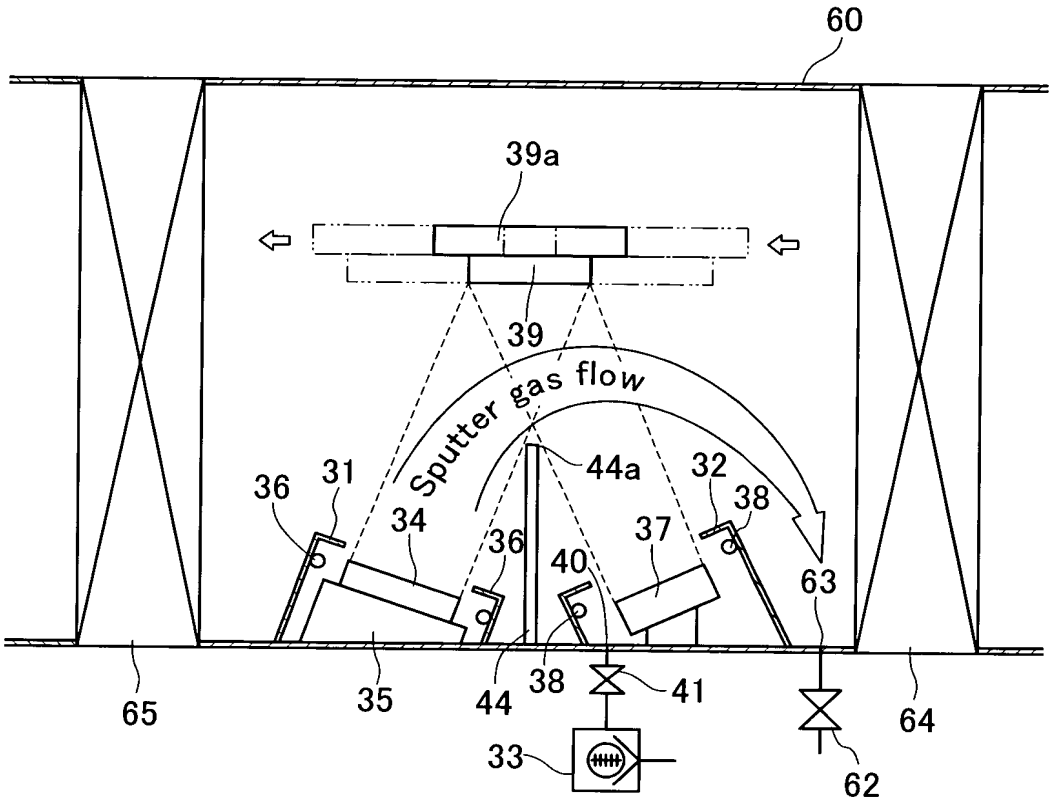

Si Target
Ar: 100sccm
Pressure condition: 0.3Pa
Metal mode
Intermediate film forming mode
Oxide mode
Deposition rate (Å/min)
1400
1200
1000
800
600
400
0
50
100
150
200
O2 flow rate (sccm)

FIG.5


50
39a
39
52
53
Sputter gas flow
44a
31
34
36
36
38
38
37
40
32
41
33
35
44

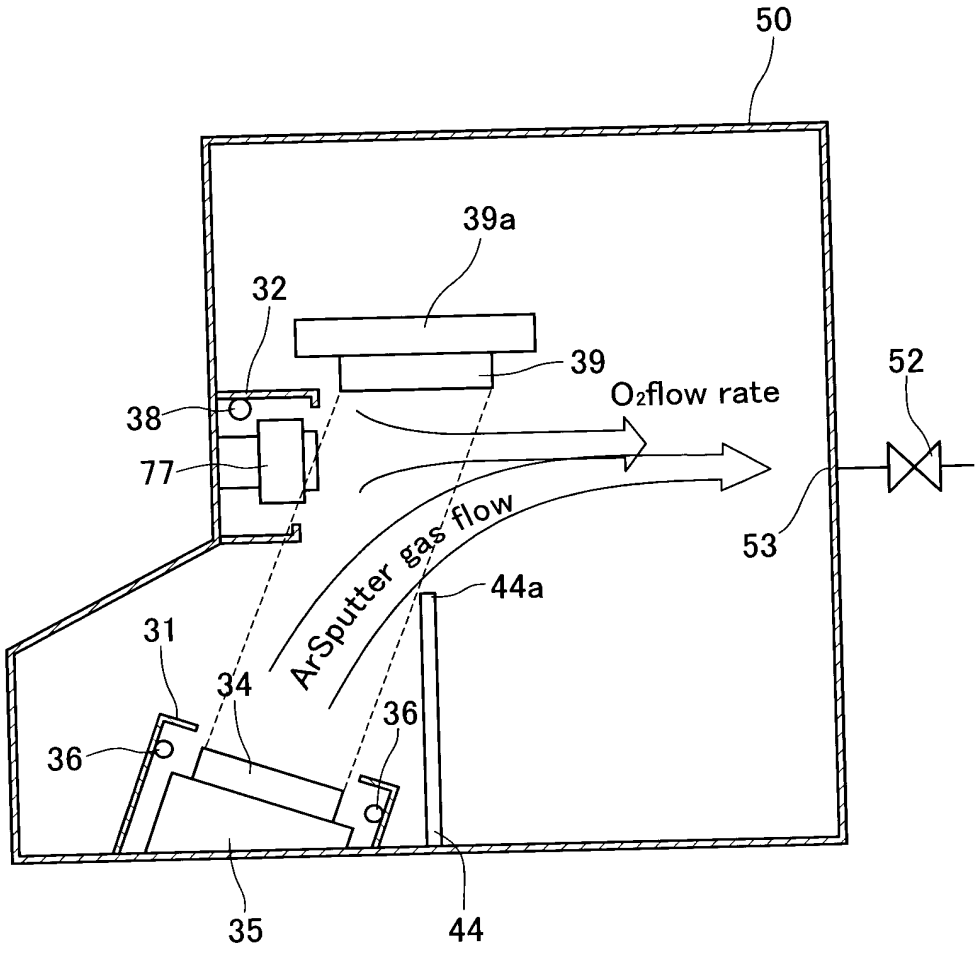
Title: Thin Film Apparatus and Thin Film Forming Method
Inventor: MORINAKA, et al.
Appln. No. : New Application
Docket No.: 101136-00098

FIG.6



Method
Inventor: MORINAKA, et al.
Appln. No. : New Application
Docket No.: 101136-00098

FIG.7



Method
Inventor: MORINAKA, et al.
Appln. No.: New Application,
Docket No.: 101136-00098

FIG.8

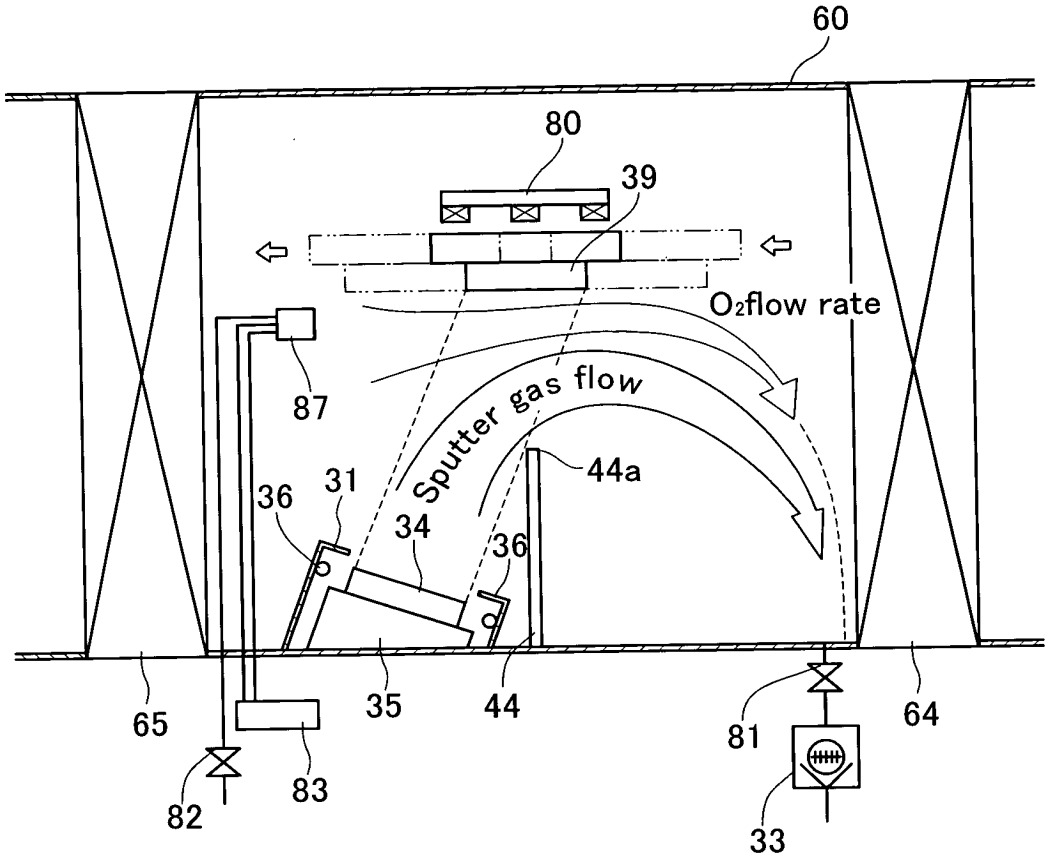


FIG.9

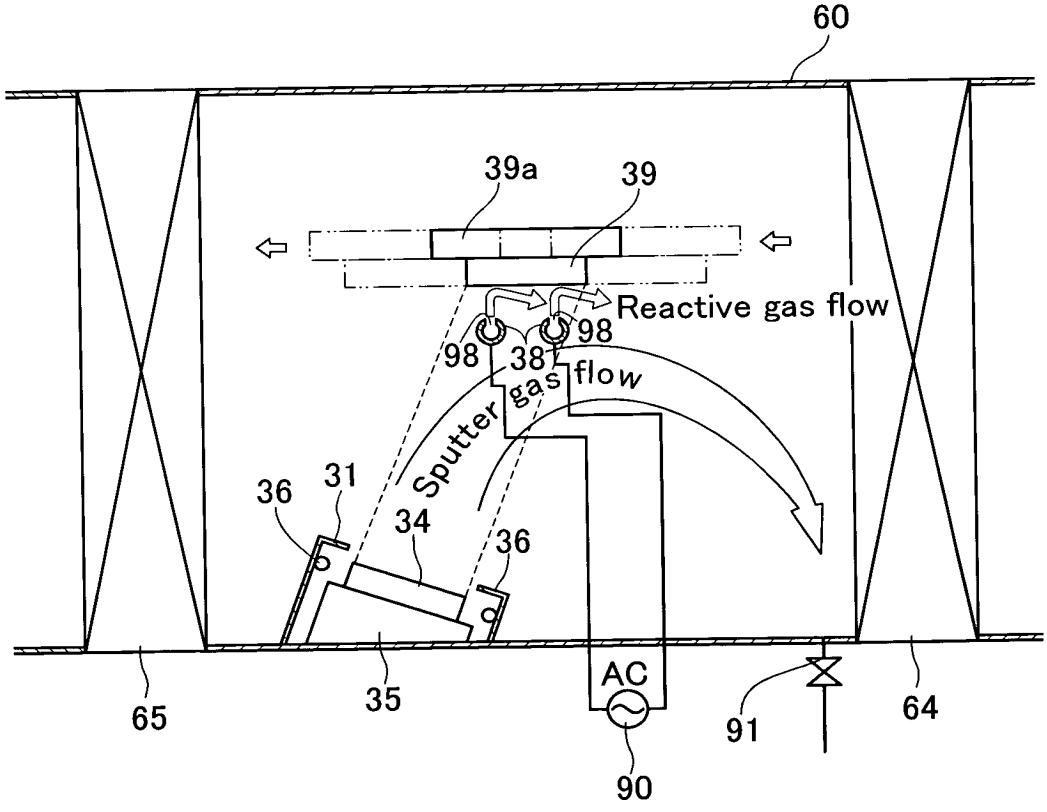


FIG.10

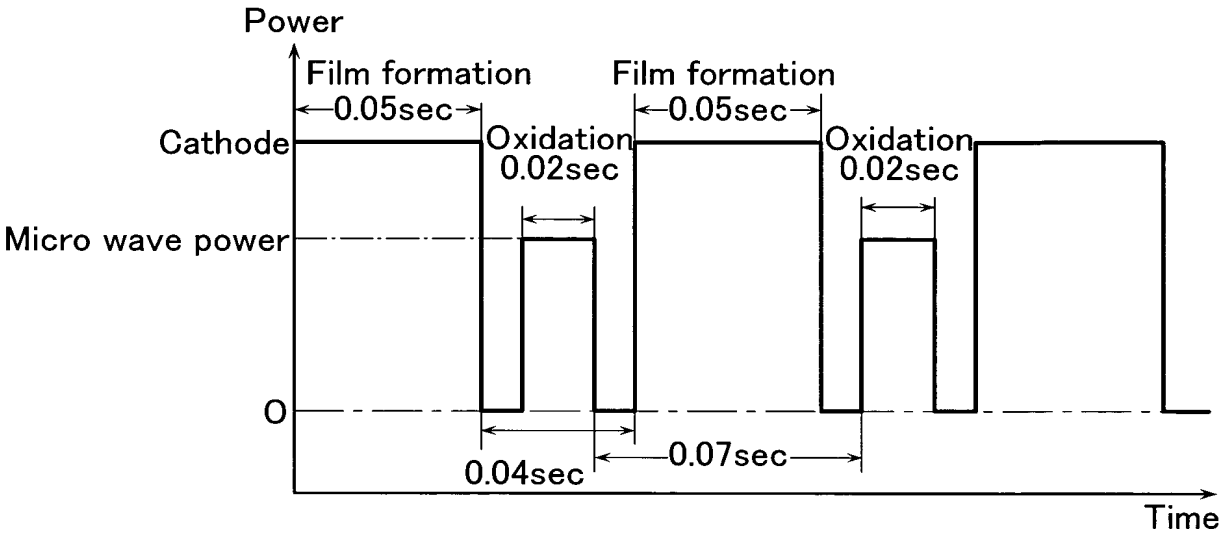
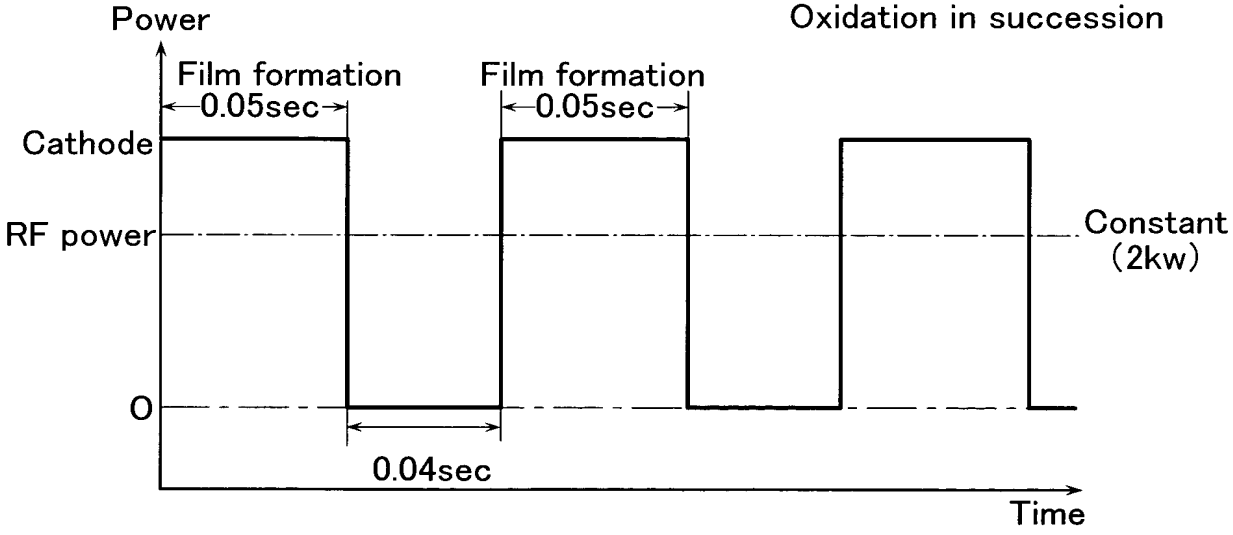

Power
Film formation
0.05sec
Film formation
0.05sec
Cathode
Oxidation
0.02sec
Oxidation
0.02sec
Micro wave power
O
0.04sec
0.07sec
Time

FIG.11


Power
Oxidation in succession
Film formation
0.05sec
Film formation
0.05sec
Cathode
RF power
Constant
(2kw)
O
0.04sec
Time

Method
Inventor: MORINAKA, et al.
Appln. No. : New Application
Docket No.: 101136-00098

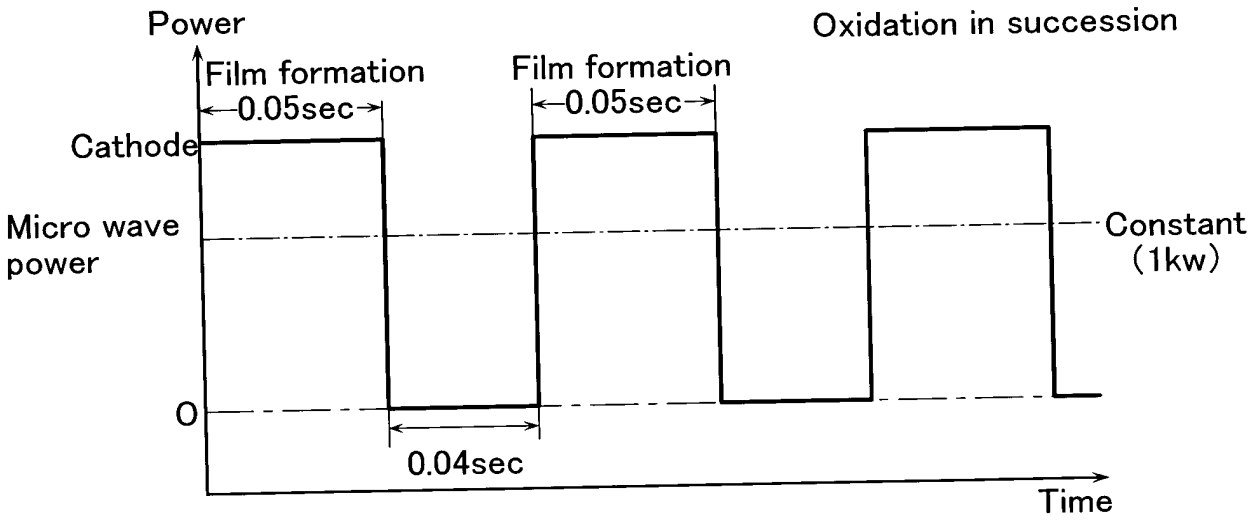



FIG.12